

# Администрирование сетевых подсистем

Лабораторная работа №5

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## Цели и задачи работы

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## Цель лабораторной работы

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Получение навыков настройки веб-сервера Apache для работы по HTTPS, создания самоподписанного сертификата, настройки PHP и подготовки автоматизированного развёртывания через Vagrant.

## Ход выполнения

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# Генерация SSL-ключа и сертификата

```
[root@server.dgavdadaev.net private]# openssl req -x509 -nodes -newkey rsa:2048 -keyout www.dgavdadaev.key -out www.dgavdadaev.crt
-----+
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [XX]:RU
State or Province Name (full name) []:Russia
Locality Name (eg, city) [Default City]:Moscow
Organization Name (eg, company) [Default Company Ltd]:dgavdadaev
Organizational Unit Name (eg, section) []:dgavdadaev
Common Name (eg, your name or your server's hostname) []:dgavdadaev.net
Email Address []:dgavdadaev@dgavdadaev.net
[root@server.dgavdadaev.net private]# ls
localhost.key  www.dgavdadaev.crt  www.dgavdadaev.key
[root@server.dgavdadaev.net private]#
[root@server.dgavdadaev.net private]# mv www.dgavdadaev.crt www.dgavdadaev.net.crt
[root@server.dgavdadaev.net private]# mv www.dgavdadaev.key www.dgavdadaev.net.key
[root@server.dgavdadaev.net private]# cp www.dgavdadaev.net.crt /etc/ssl/certs/
[root@server.dgavdadaev.net private]#
```

Рис. 1: Генерация ключа и сертификата

## Конфигурация Apache: HTTP → HTTPS редирект

```
Open ▾ + www.dgavdadaev.net.conf /etc/httpd/conf.d S
1 <VirtualHost *:80>
2     ServerAdmin webmaster@dgavdadaev.net
3     DocumentRoot /var/www/html/www.dgavdadaev.net
4     ServerName www.dgavdadaev.net
5     ServerAlias www.dgavdadaev.net
6     ErrorLog logs/www.dgavdadaev.net-error.log
7     CustomLog logs/www.dgavdadaev.net-access_log common
8     RewriteEngine on
9     RewriteRule ^(.*)$ https:// %{HTTP_HOST} $1 [R=301,L]
10 </VirtualHost>
11
12 <IfModule mod_ssl.c>
13 <VirtualHost *:443>
14     SSLEngine on
15     ServerAdmin webmaster@dgavdadaev.net
16     DocumentRoot /var/www/html/www.dgavdadaev.net
17     ServerName www.dgavdadaev.net
18     ServerAlias www.dgavdadaev.net
19     ErrorLog logs/www.dgavdadaev.net-error.log
20     CustomLog logs/www.dgavdadaev.net-access_log common
21     SSLCertificateFile /etc/ssl/certs/www.dgavdadaev.net.crt
22     SSLCertificateKeyFile /etc/ssl/private/www.dgavdadaev.net.key
23 </VirtualHost>
24 </IfModule>
25
26
```

## Проверка работы HTTPS

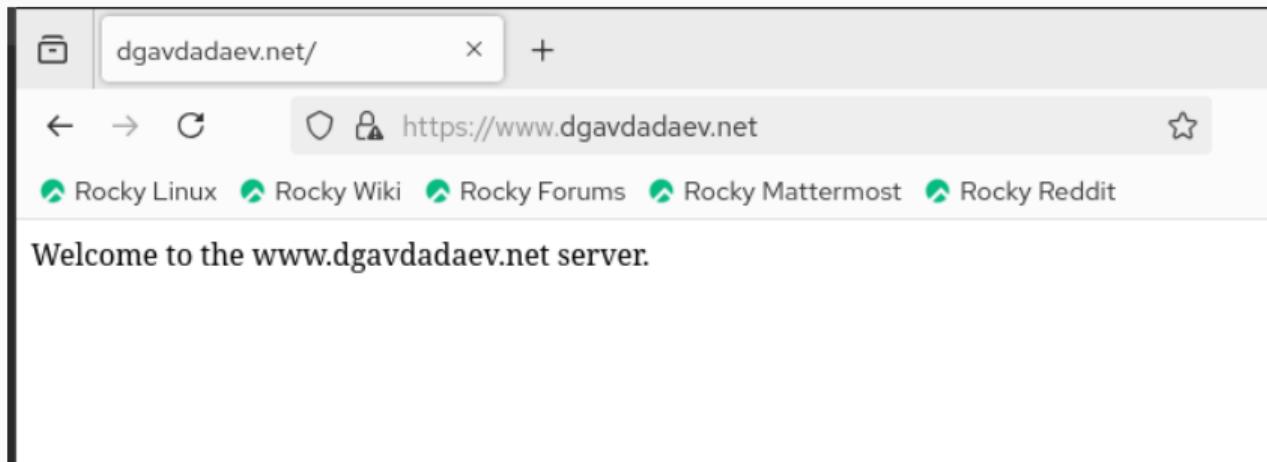


Рис. 3: Работа сайта по HTTPS

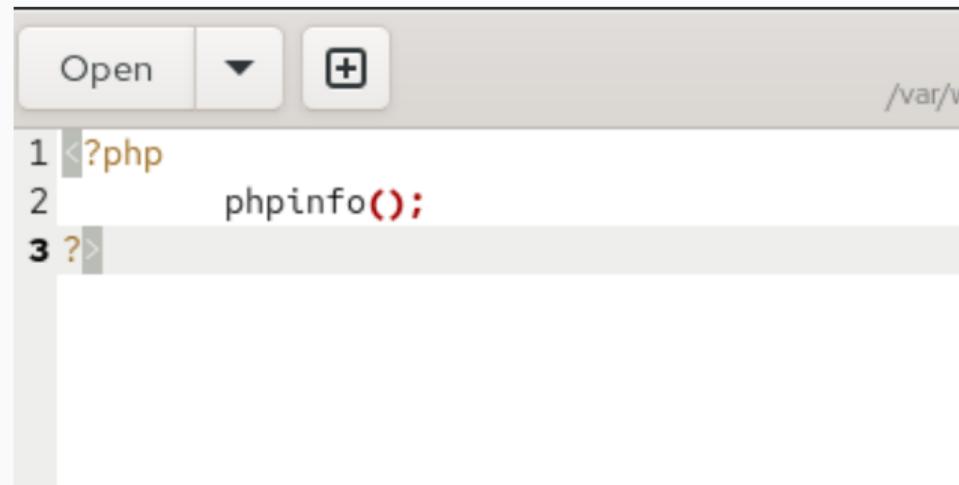
# Проверка информации о сертификате

The screenshot shows a Firefox browser window with the address bar displaying "about:certificate?cert=MIIEGzCCAwOgAwIBAgIUExDI3". The main content area is titled "Certificate" and shows the subject name "dgavdadaev.net". Below this, a table lists the following X.509 subject information:

Subject Name	
Country	RU
State/Province	Russia
Locality	Moscow
Organization	dgavdadaev
Organizational Unit	dgavdadaev
Common Name	dgavdadaev.net
Email Address	dgavdadaev@dgavdadaev.net

Рис. 4: Просмотр сертификата

## Настройка PHP и создание index.php



The screenshot shows a code editor window with the following content:

```
1 <?php  
2     phpinfo();  
3 ?>
```

The file path is visible at the top right of the editor window: /var/www.

Рис. 5: Файл index.php

# Проверка обработки PHP-страниц

The screenshot shows a web browser window with the URL <https://www.dgavdadaev.net>. The page title is "PHP Version 8.3.19". Below the title is a table displaying various PHP configuration details. The table has two columns: "System" and its corresponding value. The values are as follows:

System	Linux server.dgavdadaev.net 6.12.0-124.8.1.el10_1.x86_64 #1 SMP PREEMPT_DYNAMIC Tue Nov 21 14:00:00 UTC 2025 x86_64
Build Date	Mar 12 2025 13:10:27
Build System	Rocky Linux release 10.0 (Red Quartz)
Build Provider	Rocky Enterprise Software Foundation
Compiler	gcc (GCC) 14.2.1 20250110 (Red Hat 14.2.1-7)
Architecture	x86_64
Server API	FPM/FastCGI
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc
Loaded Configuration File	/etc/php.ini
Scan this dir for additional .ini files	/etc/php.d
Additional .ini files parsed	/etc/php.d/10-opcache.ini, /etc/php.d/20-bz2.ini, /etc/php.d/20-calendar.ini, /etc/php.d/20-ctype.ini, /etc/php.d/20-curl.ini, /etc/php.d/20-dom.ini, /etc/php.d/20-exif.ini, /etc/php.d/20-finfo.ini, /etc/php.d/20-ftp.ini, /etc/php.d/20-gettext.ini, /etc/php.d/20-iconv.ini, /etc/php.d/20-mbstring.ini, /etc/php.d/20-phar.ini, /etc/php.d/20-simplexml.ini, /etc/php.d/20-sqlite3.ini, /etc/php.d/20-tidy.ini, /etc/php.d/20-xml.ini, /etc/php.d/20-xmlwriter.ini, /etc/php.d/20-xsl.ini, /etc/php.d/30-pdo_sqlite.ini

# Подготовка окружения для автоматического развертывания

```
[root@server.dgavdadaev.net www.dgavdadaev.net]# cp -R /etc/httpd/conf.d/* /vagrant/provision/server/http/etc/httpd/conf.d/
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/autoindex.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/fcgid.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/manual.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/README'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/server.dgavdadaev.net.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/ssl.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/userdir.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/welcome.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/www.dgavdadaev.net.conf'? y
[root@server.dgavdadaev.net www.dgavdadaev.net]# cp -R /var/www/html/* /vagrant/provision/server/http/var/www/html/
cp: overwrite '/vagrant/provision/server/http/var/www/html/server.dgavdadaev.net/index.html'? y
[root@server.dgavdadaev.net www.dgavdadaev.net]#
[root@server.dgavdadaev.net www.dgavdadaev.net]# mkdir -p /vagrant/provision/server/http/etc/pki/tls/private
[root@server.dgavdadaev.net www.dgavdadaev.net]# cp -R /etc/pki/tls/private/www.dgavdadaev.net.key /vagrant/provision/server/http/etc/pki/tls/private
[root@server.dgavdadaev.net www.dgavdadaev.net]# mkdir -p /vagrant/provision/server/http/etc/pki/tls/certs
[root@server.dgavdadaev.net www.dgavdadaev.net]# cp -R /etc/pki/tls/private/www.dgavdadaev.net.crt /vagrant/provision/server/http/etc/pki/tls/certs/
[root@server.dgavdadaev.net www.dgavdadaev.net]#
```

Рис. 7: Копирование конфигурационных файлов

## Изменения в скрипте http.sh

```
1 #!/bin/bash
2 echo "Provisioning script $0"
3 echo "Install needed packages"
4 dnf -y groupinstall "Basic Web Server"
5 dnf -y install php
6
7 echo "Copy configuration files"
8 cp -R /vagrant/provision/server/http/etc/httpd/* /etc/httpd
9 cp -R /vagrant/provision/server/http/var/www/* /var/www
10 chown -R apache:apache /var/www
11 restorecon -vR /etc
12 restorecon -vR /var/www
13 echo "Configure firewall"
14 firewall-cmd --add-service=http
15 firewall-cmd --add-service=http --permanent
16 firewall-cmd --add-service=https
17 firewall-cmd --add-service=https --permanent
18 echo "Start http service"
19 systemctl enable httpd
20 systemctl start httpd
21
```

Рис. 8: Изменения в скрипте http.sh

## Выводы

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## Итоги лабораторной работы

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Настроен веб-сервер Apache для работы по HTTPS, создан самоподписанный сертификат, включён редирект с HTTP, добавлена поддержка PHP.

Конфигурации и SSL-материалы подготовлены для автоматической установки при развёртывании через Vagrant.

Все элементы функционируют корректно, сайт доступен по защищённому протоколу и выполняет PHP-скрипты.